

reach such a conclusion. Furthermore, while they may be very popular among primate morphologists, the use of residuals in such analyses may in fact be inappropriate as numerous researchers and studies suggest.

Caton's chapter with a detailed appendix about the gastrointestinal tract of *Pygathrix nemaeus* provides one of the most thorough and useful descriptions about colobine stomachs to date. As with the other phylogenetic analyses in this volume, her analysis of gut features leaves much to be desired. Here the problem is a lack of sufficient phylogenetically informative characters to produce a meaningful analysis. Only 10 morphological characters are used to resolve a tree with 6 taxa containing 10 branches. Furthermore, if the data are considered to be unordered (i.e., their polarity is unknown), one shorter and four equally parsimonious trees to that found by Caton exist. Therefore, while Caton's description and interpretation of the morphological features of the colobine digestive system are extremely useful, her phyletic interpretation is open to question.

Part III of the volume opens with Kirkpatrick's incredibly thorough overview of the ecology and behavior of these monkeys. This may be the single most useful chapter of the book. Lippold supplies an up-to-date ac-

count of recent research into how much more widely distributed and socially and ecological variable the douc langurs of Vietnam are than previously thought. The next several chapters present the results of various field observations regarding the ecology and behavior of *Rhinopithecus* in both Vietnam and China. The final and shortest section of the book contains four short chapters on the conservation status of the snub-nosed monkeys and doucs. The honest pessimism expressed regarding the future status of some of the species does not prevent useful suggestions for the rest from being pursued. The book ends with a 30 page gazetteer by Kirkpatrick, which like his review of their ecology and behavior, is sure to become an indispensable aid for researchers studying these fascinating, and, now hopefully better understood monkeys.

Despite this reviewer's misgivings about several of the analytical chapters, overall this book supplies a great deal of useful data and observations regarding the snub-nosed monkeys and doucs.

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INTRODUCTION TO THE PRIMATES. By Daris R. Swindler. 1998. Seattle, Washington: University of Washington Press. 284 pp. ISBN 0-295-97704-3. \$22.00 (paper).

Daris Swindler's new book fills a long-standing gap in the primatology literature and will be welcomed by teachers of undergraduate anthropology courses on the functional and evolutionary biology of primates. *Introduction to the Primates* is a synthesis and summary of a large literature on the morphology, growth and development, social behavior, and fossil history of the primates told by a leading researcher and masterful teacher of this material. Geared toward an undergraduate audience, the book clearly and concisely tells a story about the evolu-

tion and adaptations of non-human primates, touching on many aspects of comparative primate biology that will be of interest to undergraduate students. Written in a casual, at times anecdotal style, this should be a popular textbook choice for many biological anthropologists who share Swindler's orientation toward primate anatomy and growth and development. Swindler has dedicated this book to two recently deceased close friends and colleagues of his (and of many readers of this journal), Jim Gavan and Elizabeth Watts.

Swindler's goal in this text is ambitious, involving nothing less than providing a complete survey of primate biology for students with little or no prior background in biology or biological anthropology. It is to his credit

that he accomplishes this goal in fewer than 300 pages of well-organized, nicely illustrated (by Linda E. Curtis), and highly readable text. The book begins with a very interesting introductory chapter on the history of human interest in and study of non-human primates. Of particular interest is the discussion of the 17th and 18th century anatomical descriptions of apes by Tulp, Tyson, and Buffon, as well as 19th century field reports of the African apes. In addition to exploring definitions of the Order Primates, the next chapter provides a working classification of living primates, a brief discussion of evolutionary and cladistic approaches to systematics (Swindler prefers the former), and an overview of the major features and geographic distribution of the major groups of modern primates. This chapter sets the stage for the remainder of the book, a series of chapters that document the range of variation in features such as skull morphology, dentition and diet, brain and special senses, and skeletal morphology of the living primates. The book closes with sections on primate evolution and the behavior and conservation status of modern primates.

Swindler is at his best when describing comparative and developmental aspects of non-human primate osteology, especially relating to diet, dentition, and cranial morphology. His chapter on the skull provides an excellent overview of the comparative anatomy of the primate skull. He incorporates historical insights into his presentation, for example, tracing ideas about the presence or absence of the premaxilla in the human skull back through Vesalius (16th century) and Galen (2nd century). Comparative anatomical topics that are nicely covered in this chapter include the evolution of the mammalian ear ossicles, the anthropoid postorbital septum, and the human chin. For each of these topics, Swindler cites recent as well as classic references, providing further access to a wide range of literature for interested students. Perhaps the best chapter in this text is the one on growth and development, an area in which Swindler has made major contributions over a long and illustrious career. This chapter includes very accessible discussions of the develop-

ment of the genitalia and reproductive organs of male and female primates, primate placentation, prenatal and postnatal development, and life history theory. A very useful table entitled "Vital Statistics of Living Primates" provides a wealth of life history data on 21 prosimian and 39 anthropoid species and could provide students with the opportunity to explore the relationship between, for example, adult and neonatal brain and body weight, gestation length, and diet. The section on postnatal growth covers skeletal and dental development, physiological age, growth curves, and the adolescent growth spurt.

The final section of the book includes three chapters on primate social behavior, conservation, and the fossil record of primate evolution. The fossil primates chapter provides a quick overview of primate evolution from *Purgatorius* to *Homo* that is authoritative if, at times, a bit hurried. One of the strengths of this chapter is the author's willingness to present in an even-handed fashion both sides of controversial topics, such as the status of plesiadapiformes, anthropoid origins, the origin of the New World primates, and the taxonomic placement of *Oreopithecus*. Never dogmatic, Swindler presents opposing viewpoints in a way that allows the classroom instructor to emphasize the fluid and unsettled nature of paleoprimatological knowledge. The only chapter of this book that is, in this reviewer's opinion, a bit weak is the one on primate social behavior. Here Swindler's descriptive approach fares less well than in his discussions of morphological topics. Subsections on grooming, dominance, and social structure do little to inspire the fledgling primatologist, and the selection of research results to highlight seems idiosyncratic. The section on communication discusses the sign language work of the Gardners and Roger Fouts with Washoe but not the very exciting research by Sue Savage-Rumbaugh on Kanzi. Cheney and Seyfarth's work on vervets is mentioned only very briefly, while Byrne and Whitten's Machiavellian intelligence hypothesis is not mentioned at all. The absence of any consideration of sociobiology or any other theoretical approach to the study of

primate behavior might (falsely) suggest to students that primate behavior is a descriptive, inductive branch of ethology informed by few theoretical insights. In spite of this minor weakness, *Introduction to the Primates* is highly recommended for use in undergraduate classes on primatology, espe-

cially where the instructor is oriented toward issues of comparative morphology, growth and development, and evolution.

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